Supplementary Information: Signatures of magnetic entropy in the thermopower signal of Weyl semimetal nanoribbons

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The magnitude of the transverse voltage response generated by the Nernst effect depends on the contact spacing w. We have therefore tested devices with a different layout (cp. Fig. S1a and c) designed to generate larger signals. Since the temperature gradient in this device layout can not be evaluated as accurately as with multiple contact pairs, we show the anomalous transverse voltage $V_{\mathrm{y}}^{\mathrm{A}}$ in Fig. S1b and d instead of the anomalous Nernst coefficient. $V_{\mathrm{y}}^{\mathrm{A}}$ exhibits all the salient features discussed in the main text for $S_{\mathrm{yx}}^{\mathrm{A}}$.

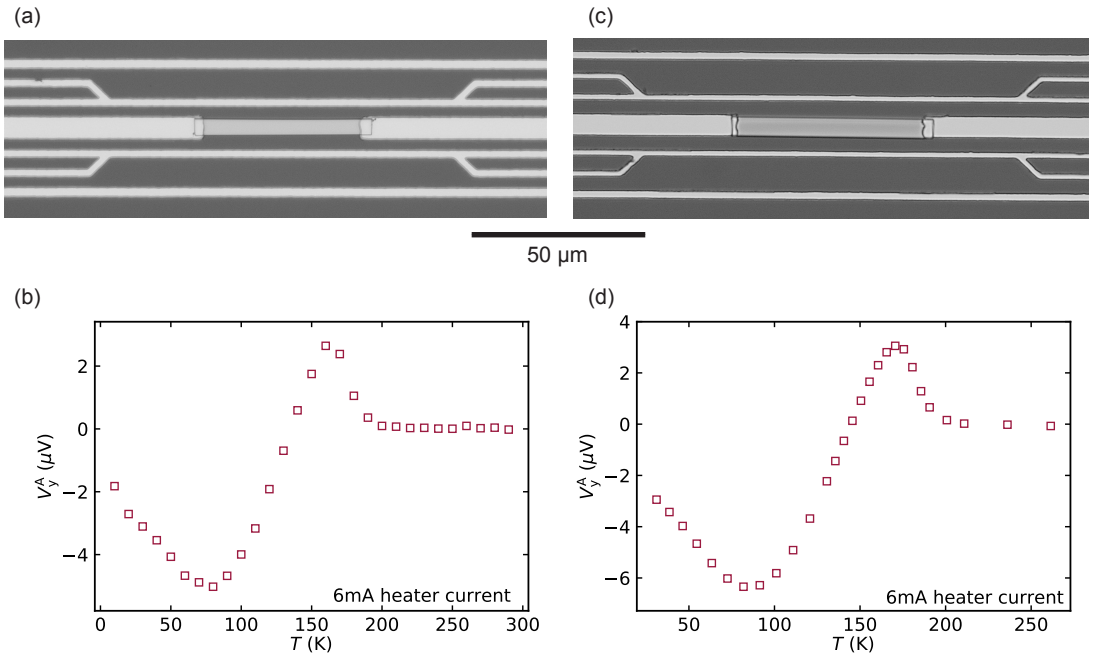

Fig. S 1. (a), (c) Micrographs of two further samples with different layout. (b) The anomalous transverse voltage recorded in the sample depicted in panel (a) for a heater current of 6 mA shows the characteristic sign change, just as $S_{\mathrm{yx}}^{\mathrm{A}}$. (d) The anomalous transverse voltage of the sample depicted in panel (c), recorded for a heater current of 6 mA, again reproduces the sing change.

Figure 2 depicts S_{yx}^{A} extracted for three different contact pairs on one and the same device (the one discussed in the main manuscript). These data further underline the robustness of the sign reversal of S_{yx}^{A}. The somewhat different S_{yx}^{A}

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magnitudes reflect the somewhat different temperature gradients at the respective contact pairs. A careful analysis of the response on multiple contact pairs for different temperature gradient directions demonstrates that indeed the temperature gradient and not local changes of the anomalous Nernst coefficient are the origin for the apparent scatter in effect magnitudes.

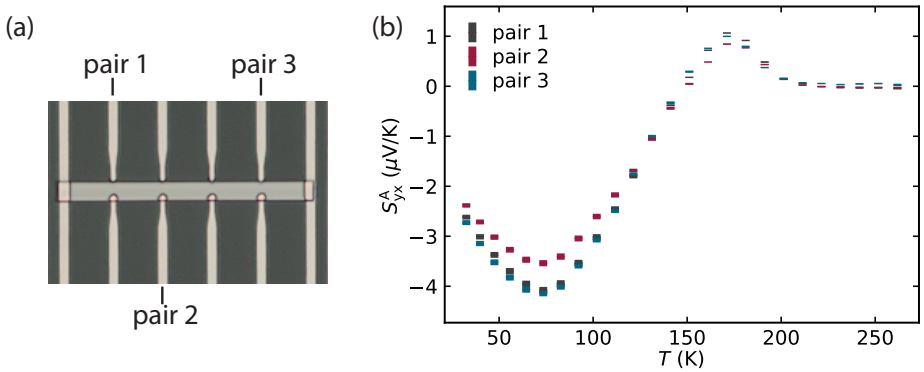

Fig. S 2. (a) Micrograph of the device discussed in the main text, with the different contact pairs investigated as indicated (b) Temperature dependence of S_{yx}^{A} for the three different contact pairs inidicated in (a). The vertical symbol size corresponds to the respective error bars.

We also have evaluated the thermal gradient for different heater currents. Figure S3 depicts the thermal gradient obtained for 2 mA, 4 mA and 6 mA in the device discussed in the main text. The gradient changes as a function of temperature since the resistance of the Pt heater (and thus the heater power for a fixed heater current) and the thermal conductivity of the substrate also are temperature dependent themselves.

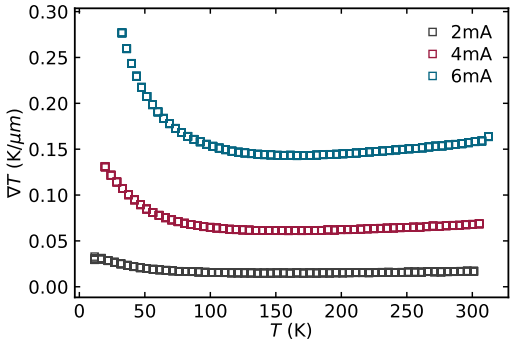

Fig. S 3. Thermal gradient ∇T as function of temperature for three different heater currents of 2 mA, 4 mA and 6 mA.